National Pleione Report

incorporating

Hardy Orchids

1994

NATIONAL PLEIONE REPORT1994

incorporating

HARDY ORCHIDS

Cover artwork by Brian Whyer

Cover photography and production by Trevor Jones of J&J Photographic

Report compiled and produced by Peter Bradbury. Publication date 06:06:94

WHILST TRAVELLING THE ROAD TO OLD CATHAY

It seems a long time ago since I was travelling the road in Yunnan and south east Tibet but it was only last May and June, thank goodness for field notes when it comes to needing to be accurate.

Our trip was meant to be a overall look at the flora of the province but each of us had a line they wanted to follow, mine was to see for myself the extent of species diversification in Rhododendron, this didn't stop me seeing many other things and learning many more not least about orchids which are not my strong point, however as we met quite a few I was determined to put my best foot forward and learn all I could.

The route started at Kunming the capital of Yunnan taking in the Western Hills just outside Kunming we took the plain and headed for the Cangshan mountains above Dali here we found **Pleione albiflora** growing in moss at the base of rocks at about 2,800 metres this was on the northwest face of the range I would like to say that it was growing in damp conditions but as it was pouring down that day everything was growing in damp conditions. Onward and upward as we headed with all speed for the Yangtse river for then would the majority of plants start, the plains being rather overcultivated and stripped of wild plants many moons ago whether by the hand of man or teeth of goat, and true enough as we passed through Tiger Leaping Gorge an area of mindboggling scenery we started to climb up to the Chungtien Plateau and within the hour we had found **Pleione bulbocodioides** right on the roadside a small group of plants maybe twenty or so growing on limestone at an angle of eighty degrees with a very thin cover of humus which consisted of moss and dead leaves and which in any other situation would not have supported a dead orchid yet here it was in full flower a wonderful rich pink although just about

to go over so caught just in time, this again was at about 2,900 metres.
Two more days before anything in the way of flowering orchids was spotted although the local population was busy selling orchid species in pots at every roadside market in villages and towns that we passed through, though what these plants were I do not know not being in flower, however our next days botanising was in the Bita Hai valley on the plateau where we met **Cyprpedium plectochiton** with small white flowers closely followed by **C.tibeticum** and **C.flavum** the former having yellowish white and pink/purple pouch flowers very clearly and boldly marked whilst the second species was yellow throughout with green stripes, again the next day we moved on and met quite a large colony in fact several colonies of **Calanthe tricarinata** looking magnificent in the shade growing amongst old roots and where they caught the sun standing out like stars from the gloomy shade but this time at well over 3,100 metres.
Lastly we have a plant that I did not see and in fact do not know called **Cephalanthera longiflora** ? on this occasion our party had split in two and the other group saw the plant whilst I was busy looking up a Rhododendron of some description, later on in the trip plants already mentioned were seen again on occasions notably around Wheixii where Calanthe was found to be growing very well in groups with **Arisaema elephas** and **A.auriculata.** All in all it was a fascinating trip just to see the sheer numbers of plants growing in the wild as well as which plants grew with what and where, but you have to get over the idea of laying on plants just to study and photograph others, in places there are so many plants that you cannot walk without squashing a few.

Mike Swift, Lingholm Gardens, Cumbria.

DO AS I DO, AND AS I SAY

If that heading sounds cryptic, what I am saying is that this article hides nothing, and tries to give a no nonsense guide to my method of growing Pleiones. I started growing back in 1984 with a small collection of six different bulbs. I found them fairly easy and realised that a good collection of bulbs could be staggered to give some nice colour in the drab months of February and March. That decided, it became obvious that I could not afford to buy, say fifty bulbs, so I decided to pollinate a couple of flowers and grow them on. Little did I realise what I was getting myself into. Ten years later and much wiser, I have been badgered into describing my methods, which to be honest I think are very standard, so that any potential recruits to Pleione growing will get an easier introduction than I did.
I decided to write this article in a diary fashion and to ensure that I missed nothing the following account is a record of my growing season through 1993, I personally feel that my season starts in September when I start sieving peat, but for these purposes I will start in January and give you a calendar year.

It is now January 8th and I am cleaning all my growing trays in the kitchen sink and generally making myself very popular. This cleanliness is absolutely essential and I add a good measure of Jeyes Fluid to disinfect the whole tray. Do not forget that the little bugs and critters can get up under the lip of the trays and lay in wait for their first early spring feed. I never wipe the trays dry, but let them drain. This gives the Jeyes Fluid the maximum time to work.
January 14th and I have managed to get a few hours off work so I can start to

plant the Pleiones. You can use a variety of composts and I would recommend experimentation for a few seasons until you find a mix which suits your own conditions and growing methods. I use a fairly open compost but tend to water more frquently than most other people and always have as much ventilation open as possible.
My compost mix is as follows:

6 Parts Fine Grade Bark.(Obtainable from most Orchid nurseries)
4 Parts Sieved Peat *Lumps only
½ Part Perlite
1 Box of Fine Grade Charcoal (J Bowers is perfect and readily available from most garden centres)
1 Teaspoon of Fine Grain (Micro) Plant Fertilizer

*I consider for my conditions that the peat portion of the compost is the most critical component. I grow daffodils for exhibition and these need covering in the frame with peat so I sieve through a three eights inch mesh and keep rubbing the lumps to remove all but the very hard pieces of firmer peat. These pieces are usually only just over three eights inch, but if you are unlucky and get a bad bag, you could find that most pieces are about one inch and totally unsuitable. At the opposite end, some makes are very fibrous and contain no lumps at all. From my experience, the best and most consistent provider of hard lumps is the Shamrock trade mark peat in the white based plastic sack, marked with two colour greens. However, beware, do not confuse it with the Erin trademark, this is one of the fibrous ones. A "Part" in my system is one of my mothers two pint saucepans which she kindly donated when she was once on

holiday, returning to find it storing slug pellets!

January 21st: Finished planting all bulbs and positioned the mature bulbs on the bottom shelf and the younger ones on the top shelf. A few notes here will not go amiss on the tray and pot sizes and the temperatures.
I use the stronger deeper seed trays, 14 X 8 X 3 for the mature bulbs, and the strong half size seed trays 8 X 6 X 2 for the young seedlings. From experience it seems that the optimum depth of compost is twice the height of the bulb with the bulb then planted by working it carefully into a full tray of compost right up to the very top of the bulb.If you plant it any shallower there is a very high possibility that the new roots will push it out of the compost to the detriment of the resulting bulb.
In the large seed trays I plant fifteen bulbs in a 5 X 3 pattern, otherwise I plant three bulbs in a five inch half pot. The smaller bulbs are planted approximately $\frac{3}{4}$ inch appart in the half trays.
Immediately on planting I soak the compost by watering from above with a fine rose. Never immerse, since the compost simply floats away and that is a super waste of time and energy. I then scatter a few slug pellets over the surface, and on the staging.
I have a very accurate thermostat sitting on the staging controlling a 3KW fan heater which is positioned under the staging. The temperature is set at 45 F which gives a temperature of about 48 F on the top shelf where the smaller bulbs are placed. I have an automatic roof vent set to open at 60 F and so I can control the temperature during the critical spring period to a nice band of 45 - 65 F.
February 2nd: Time to go to the laboratory to collect this years flasks.

I always do this in the first week of February so that they die back and can be planted early enough to to have a full season of growth.

February 21st: Water all bulbs again, for only the second time. It is most important that during the early days as the roots are finding their way into the compost, you do not overwater. If you kill a root, it is not replaced by another. The first flasks are now ready for replanting into the small trays. I use the same compost as for the mature bulbs, but I do take out any larger pieces of peat if they get in the way while I am planting. As with mature bulbs, I plant them in rows and position the tops just below the surface. This is one of my favourite times when I am sorting out the babies and just hoping that they will grow away and eventually produce new bulbs and perhaps a new colour break that we are looking for.

February 25th: I have just sprayed all the trays with Rapid. a Pirimacarb based insecticide, for any greenfly and other bugs. The first buds will be well on their way by now and Pirimacarb does not burn or mark the flowers at all.

March 1st: All flasks have now been planted and the earliest of the flowers are in bloom. I have taken the pollinia from **Cream Eiger** and put it in test tubes in the fridge awaiting the seed parents to flower. **Cream Eiger** is a poor flower and very short in the stem but as a pollen parent it seems to be most useful in transmitting its twin flowering characteristics. Also, it does not seem to shorten the stem length of the seed parents progeny. One of my recent crosses, **Tongariro** X **Cream Eiger**, which is called **P.Orinoco**, is an extremely vigorous cultivar. One selected clone produces almost all twins with

the occasional triple headed specimen. Sprays of Pleiones might not be that far away!

March 5th: Fun time begins, this is what it is all about. The first flowers of a cross between **P.forrestii** X **P.formosana** are open. Usually this is a rather pale insipid flower but these are very colourful with sandy/salmonish petals and a strong yellow lip. They are a little short in the stem, inherited from **P.forrestii**, but with the colour they should be invaluable in my breeding program. Some pollinia from this cross has been saved to put onto a large pink which is much later flowering. From experience I find that the best results come from using pollen which is taken from blooms that have "set" for five days from the fully out condition. The best time for the seed parent appears to be less cririca1. Three to eight days after full out "set" usually results in a fertile seed pod.

March 20th: We are now into the start of the main flowering flush which will continue through until late April with more first time flowers to enjoy and some disappointments to experience. So far I have made five crosses and I expect to make around twenty this season. All trays got their third watering today. From now on as the roots grow, different cultivars will need watering at different times so individual attention must be paid to each tray keeping in mind that you must not over water.

March 26th: Generally more warmth is available now from the daytime sunshine and the first liquid feed can be applied. Until July I use a high nitrogen feed at half strength every other watering. An NPK ratio of 2:1:1 is ideal.

April 3rd: Another critical stage now in the good cultivation of bulbs. It may seeem early but it is critical around this time to apply a good coating of Summer Cloud or some form of greenhouse shading. The scorching effect of early spring sun on tender new growths can be horrific. If you are unlucky and rain washes it off, you will just have to put more back on, and quickly.
Some pans of the seedlings are already shooting vigorously while others have yet to show any signs of life. These are now brought down to the normal staging level to prevent scorching. At this stage I turn the night-time temperature up to 50F on the bench level. I have found the few extra degrees to be critical for the seedlings.

April 6th: A quick round up of all my crosses to date is showing 100% success but this is not usually the case. The best indicator of successful polination is that the stigma pushes down onto the lip and the flower head drops slightly. I will have to wait about another six weeks to be sure of what has taken, since after a few weeks it is quite usual for some to simply dry up and fall off.

April 20th: The last pan of mature bulbs is now in full bloom giving the opportunity for some last minute pollination. I have lost only one seed pod this year out of twenty one crosses. This is well above average, some years I have experienced only around 60% success.

May 6th: All pans of seedlings are growing well as are the mature bulbs. From now until the end of June I continue to feed at every other watering with a high nitrogen feed at half strength.

June 3rd: There is more room in the greenhouse now that the bedding plants are missing. This gives the opportunity to move the Pleiones around a bit and open up the spaces between trays. This improves air circulation and helps to minimize excessive shading of the outer bulbs where the leaves of stronger bulbs sometimes shade out their weaker brethren.

June 21st: Just a reminder to continue to water and feed every other watering at half strength. I am watering about every four days at present or more often if the hot weather dictates. I have just sprayed with a contact/systemic insecticide to kill off those little black "peat" flies you get with no soil composts. One spraying is usually enough, but watch it if it is hot, you might have to repeat this in mid July.

July 29th: I spray the seedlings with a fungicide, Benlate, to prolong their "green" leaf life. I have noticed that this can add about three weeks to the growing season before the leaves turn yellow and drop off. My belief is that it can contribute to slightly large bulbs, and in the first two years after flasks this is most advantageous. I have found no benefit in spraying mature bulbs.
A subtle change in the feeding and watering is now required. You should have already changed to half strength high potash feed, a tomato fertiliser is acceptable. At this stage the compost is starting to decompose, so I allow it to dry a touch more before thoroughly soaking it. This seems to prevent stagnant conditions which can cause rotting of any bulbs which have a poor root hold.

August 6th: About this time of the year I scatter a few slug pellets over the trays and set up a mouse trap amongst the plants. There is nothing worse than emptying a tray of plump bulbs, only to find that a good third of next years shoots are chewed or completely missing. This has happened to me in the past and I regularly catch mice at this time of the year. The bulbs are making up well now, so continue with the high potash feed at every other watering until the end of September. Take care to allow the compost to nearly dry out between waterings.Occasionally you get a bulb which produces an apparently healthy shoot which then shows serious virus problems, brown streaks and blotches which vein down to the forming bulb. There is no cure for this except to remove the offending bulb from the tray and scrap it, bulbils included. Do not confuse scorch or damage marks, or even premature die back with virus. Virus does not seem to affect adjacent bulbs, so you can leave the suspect bulbs until identification is certain.

August 28th: If you have any seed pods they will regularly need checking to ensure that they do not split open from now on, before they are collected. In fact I cut all mine off when there is the first sign of ripening on any single seed pod.
A good generous spray of a systemic insecticide is applied now to prevent any insects from making a meal of a bulb. You do sometimes get attacks up the centre of the bulbs by Nematodes and Woodlice. A good soaking with systemic seems to stop this, plus a few slug pellets scattered around.

September 4th: I remove all the seed pods now, following the partial split of the first one. The first signs of Autumn are now evident with a few trays

developing soft leaves, the first sign that they are preparing to shed their leaves. Great care should be taken on watering now. Only water trays with obviously active leaves. This will usually be the seedlings and maybe an odd late cultivar.

September 22nd: All watering has been stopped and some trays are showing almost all yellow leaves. Remove these carefully without disturbing the bulbs and do not pull off the leaves before they are ready, or you may damage the crown and give access to diseases etc. One more time consuming job starts now. As I mentioned earlier, I grow Daffodils and they need covering up with fine sieved peat. I rub the peat through an old three eigths inch sieve, retaining all the hard lumps for the Pleione compost. Be sure to store the hard peat lumps in a dry place ready to use in the new year.

October 4th: I have just started de-traying the bulbs. I carefully prize them from the compost, shake it all off the roots, then cut the roots back to around a half an inch in length. Some people trim them right back, but I feel that the extra length helps to hold them in the compost when they start growing in the following spring.

October 18th: All mature bulbs have been de-trayed and the first trays of seedlings are dying back.

November 3rd: All seedlings have been de-trayed and now all bulbs are put on the lower staging and a temperature range of 37-44F is maintained. The next two months amount to a dormant period for the Pleiones and cold temperatures

encourage bud formation within the shoots. Maintain a dry atmosphere at this time, do not let them get damp or they will try to start into growth.

December 18th: I order the fine grade bark and upon receipt I sieve it through my fishing maggot riddle. This removes a surprising amount of dust which otherwise tends to clog up the compost.

January 10th: Bargain time! This is a quiet time for garden centres and many of them have sale reductions across the board. I am usually able to buy all my charcoal and Perlite at 30% discount at this time. The charcoal is expensive so I buy a year ahead and store it in my loft. This way at least I have got it when I want it and don't have to delay planting.

Well there it is, a full growing season and just a slight overlap on a year. Simple isn't it? Pleiones truly are not that difficult to grow, and reward you with a wonderful show of colour in the dull months of the year. With the modern hybrids now available in pink, bronze, salmon and yellow to add to the normal mauves, purples and whites, there is something for everyone and prices to suit any budget. With sensible precautions on shading and care with watering, follow this guide and success should be assured.

STEPHEN JAMES, Middlesex.

****

DACTYLORHIZAS - BLACK DEATH - THE BAD NEWS AND THE GOOD

Until eight years ago we had the finest and most comprehensive collections of Dacs. growing in the garden on our rich, neutral, heavy loam - always in full flower for our June 'Open Day' complementing the summer alpines on the rock garden and raised beds. This May, eight years ago I looked down on the healthy rosettes of leaves complete with buds and realised that they hadn't grown since the last inspection. Our garden, although only half an acre is rarely inspected in every corner more than once a week or two, the greenhouses and frames being a full-time job.

I touched one of the Dacs.- and it fell over, so I tried another and another and another - we had lost the lot and, seemingly, within a year. Heartbroken and furious with myself - what stupid thing had I done?. Exploration showed a mess of putrid, black slime and no vestage of tuber in any location. I know now what I did - I introduced a plant that was infected with what has become known as "Dactylorhiza Black Death". Slowly over the years the devastation of the scourge has manifested itself. Great stands of superb plants have just disappeared in some of the best gardens in the land. What it is nobody seems to be able to say - nor the cure - but more about that later. Just this last year or two we have replanted some clean tubers, mostly gifts from generous friends. These have been planted in peat beds - and we await the 1994 season. In the old beds, tiny self-sown seedlings are appearing - is it something that burns itself out of the soil in time?.

In the main we now grow our Dacs. in large, long-tom pots (Optipot rose growers pots). The inspection of incoming tubers has become almost paranoia here - even the tiniest black mark and the plant is burnt because that is the beginning -

a black streak on the new tuber. The process is the same for repotting stock. In this case the old soil and the tuber is burned because I know that the tubers will die within the year and not make a new one. There was an exception - the late Gerry Mundey's white **D.'Eskimo Nell'** is a fine plant with great sentimental value to many of us, and mine were very sick and, sure enough, there were the tell-tale black streaks. I couldn't bear to part with the plant and there was one untried can of 'jollup' in the potting shed i.e. 'Cryptonol'. This is an old tried and true fungicide used in soil in greenhouse beds, before most of the modern lethal concoctions were introduced only to be banned very shortly. **'Eskimo Nell'** was drenched in Cryptonol and went on to make fine, clean, new tubers and flowered in a peat bed. We have our fingers crossed and, needless to say, have drenched every Dac. in sight with Cryptonol. I think you can only get Cryptonol from Horticultural Wholesale Sundriesmen in five litre cans, but it is cheap and, at the rate we use it, doesn't last long.

Composts for the Dacs. in pots has been a problem. At first I used a very open bark compost as for Pleiones but it just is not strong enough. There is also another word of warning re - bark. You must make sure that the bark you buy really is bark and not shredded tree complete with pith. Also that it has weathered for at least a year, otherwise it goes on breaking down and composting in the pot, causing severe mineral deficiencies. I also tried coconut residue that seems to kill orchids quicker than any known product. The orchids just will not take the high fertilizers required, so we are back to about equal parts leaf mould or J.I. seed compost, if you can buy a decent one, fine propagation-grade bark, good sand, half part very coarse Perlite, half a part very coarse Vermiculite. This makes a much closer mix than that used for pleiones and I am also using it for Cypripediums this year. The Dacs. have some Hoof and

Horn put at the bottom of the pot over the drainage material. The Cyps. do not but Cyps. are another story as are the Orchis, Ophrys and the other 'odd-balls' i.e. Calanthes. If you need an update on these it might be an idea to telephone regularly and ask "what have you got them in this week?". My results - not bad - still trying - still experimenting and when they put me down will somebody please analyse the soil before the hole is filled in and, please, only the very best bark and no coconut rubish - and, of course, I shall need a different infill every year !!.

K N DRYDEN, Hertfordshire.

****

BLACK DEATH OF OPHRYS, ORCHIS et al.

I have just been reading, with great enjoyment and interest, the preceding article by Kath Dryden. Over recent years I have had considerable correspondence with Kath and others over Black Death of **Dactylorhiza**, and I had concluded that this disease and my Black Death of **Ophrys et al.** were different entities. Now I am not so sure. Kath's description of black streaking on the tubers is exactly the picture I see on mine, even though the follow-up is rather different. Much of what follows is reprinted from the article entitled "The Black Death 1973-1988" which I wrote for the Alpine Garden Society's Bulletin (December 1988 no. 234), and is used here by kind permission of the AGS Editor. There are, naturally, a few changes and up-dates.
It all began in 1973. During summer re-potting that year I noted small black

cracks on the surface of the current season's crop of new tubers of **Ophrys sphegodes**, a stock which had come from north-east Spain in 1972. In those early days such markings on wild tubers would have meant nothing to me, but much later examination of wild plants in the same general area of Spain showed similar black streaks, and I now feel sure that I must have brought the disease in from Spain, where it would seem to do little or no damage in the wild. I have not noticed the disease in wild plants elsewhere in the Mediterranean region. In the years succeeding 1973 I continued to note the same effect, sometimes to a much worse degree. At the time I decided that I was over-cooking my plants during summer dormancy, so I began to keep them as cool as can be managed in a south-facing lean-to. I am sure that this management is right (for other reasons) and the plants have continued to appreciate it, but it did not help what had by then become a very serious outbreak of "Black Tuber Disease". Whole stocks vanished in a season. I nearly wept when the first **Ophrys** I had ever grown **O. lutea galilea**, was reduced, after an apparently healthy growing season, to hard, black, lifeless knobs below ground. This had been an important plant to me: it had increased many fold over the years and was (together with more recent stocks) providing me with the evidence for the great longevity of our European tuberous orchids in captivity. Even worse was the loss in the same way of a pan of forty or more flowering plants (just one still remains in 1994) of **Ophrys vernixia (=speculum)** grown from my own seed -- the Greeks used to call indecent pride hubris and knew what the result would inevitably be. We call it one-upmanship, and we still know what is going to happen by talking about pride going before a fall.

By now, pot after pot was being affected. In the worst cases the new tuber was reduced to a hard black knob at the end of the brittle black sinker stalk. In

less severe infections there were the black cracks already mentioned, or black surface blotches. These are quite superficial and often do not penetrate more than 1mm. or so below the surface. A common site for black discolouration, though I connot always be sure that it represents disease, is at the base of the sinker stalk where it ensheaths the new growth bud. As far as I can see, by the time dormancy sets in no further disease changes occur in the tuber, either then or during the ensuing growing season: all damage takes place from the earliest stage of the sinker and right through the growth stage of the new tuber. Above ground I can detect no signs of infection -- I doubt whether there is any connection between Black Disease and the black spots of fungal origin found on the leaves. These spots are in any case usually absent from what turn out to be bad cases of Black Disease.

Only two things were obvious to me: that I had a major infectious disease and that I was in danger of losing my whole collection. I had become so dispirited that I very nearly gave up growing orchids: it seemed to me that the continuing losses of precious plant material were beginning to make my hobby and my research quite unjustifiable. The problem was where to find help and advice with such a problem in a little understood group of plants. The RHS very actively tried to help, and I am most grateful to them. Their plant pathology department reported that diseased tubers had fungal mycelia (that in itself was hardly surprising!), but there was never any mention of bacteria. From this I tentatively concluded that the most likely cause must be a pathogenic fungus.

In those days one of the biggest mental blocks to be overcome in growing our European tuberous orchids was the relationship between the orchid and the mycorhizal fungus. At a very early stage I had realised that as far as the adult plant is concerned this relationship can be disregarded, but nevertheless

I continued deliberately to use the most unhygienic methods, such as making up my potting mix with fifty per cent of the previous season's soil, with the vague idea that this would help to perpetuate the fungus -- as indeed it did, but the wrong one! this had to be stopped forthwith, and after a period of experimentation I made radical alterations to my potting mix, avoiding incorporating any previously used orchid soil. Having overcome this mental barrier, the next step that seemed obvious at the time was to spray throughout the growing season with systemic fungicides. I had set such hopes on this regime that it was its utter failure which nearly caused me to give up the struggle. However, I remembered the effectiveness of Captan powder for collar rot -- the late Graham Lovell had put me on to this, and to his shade be my eternal thanks -- and I began experimentally using the powder when re-potting. And it worked! Over the last few years I have been evolving what seem to be workable procedures. I have a suspicion (but no definate evidence) that the fungal attack may start at a very early stage in the formation of the sinker which evolves into the new tuber; I have wondered whether it may possibly originate in the remains of the pedicel that sheaths the new season's growth bud. Therefore all my tubers, whether clean or diseased, were given a heavy coating of Captan powder at the growing end during summer re-potting, and if the indications of disease were present, then the whole tuber was rolled in the powder until it was coated all over. For the reason given below I have almost entirely given up the prophylactic treatment of clean tubers, though I still treat obvious disease as before. An example of what may be expected is provided by my **X Orchiaceras** clone 1. My stock of five in 1986 was so badly affected that I considered burning the lot, but in the end I could not bring myself to do this (thank goodness!) and they were heavily treated with Captan. In 1987 the stock looked

completely clean, but in the following year one tuber was slightly affected. Since then the stock has continued to flourish, with occasional relapses. This seems to be the usual pattern: over-all control of the disease, with individual cure in nearly all cases, but always with the possibility of a relapse. Obviously some groups and clones are more susceptible than others, the most susceptible being the genus **Ophrys. Serapias** can take the disease badly -- at the worst period I only just saved my stock of Corsican **S neglecta** dating from 1973 -- but are amenable to treatment and prophylaxis. **Orchis, Aceras** and **Neotinea** do not appear to pick up the disease so readily, or to become so badly affected. The lovely **X Orchiaceras** hybrids do not pick it up readily, but can become very severely affected if the disease gets in. I used to think that Captan had no deleterious affect on growth and flowering. Now I am not so sure, it seems to to me that long term use weakens **Ophrys**; and I suspect that an already weak stock of any genus may suffer from inhibition of the natural mycorhizal fungus by Captan.

For the future there are two worries. Captan has been withdrawn from the market, so the search must be on for a substitute. Two possibilities I have not yet tried are soaking the tubers at dormancy in a systemic fungicide or the old-fashioned remedy of dusting with Flowers of Sulphur. (Memo to myself: try this in the coming summer of 1994). Any other fungicides have given nil results for me. The other problem is seed germination. Before the Black Death hit me I was obtaining <u>some</u> germination in about ten per cent of sowings. The disease was lethal to practically all seedlings, which died off at an early stage; and since using Captan I have had no further germination, which is hardly surprising. For this I can at the moment see no obvious solution, so in all these

years after hopeful beginnings, I have made no real progress towards my long-term objective of being able to germinate **Ophrys** and **Orchis** seed at will on the greenhouse bench as one does mustard and cress.

TOM NORMAN, Dorset

****

PLEIONES UNDER THE SOUTHERN CROSS

In this great Southern land of Australia, where I can gaze at the heavens at night and watch the daughters of Pleione among the Pleiades being pursued across the sky by Orion, I grow my pleiones a little differently to many European growers. The main variation being that I do not keep the bulbs dry during their dormant period.

The only time the bulbs are kept dry is during the period between lifting the dormant bulbs and planting them out again. I commence lifting them about the middle of May and plant them out again on the first Sunday in June. This means they are only kept dry for from two to four weeks.

A group of seven friends come over every year to assist me in the planting process. They all bring various eats and we have lunch and afternoon tea interspersed with planting. Prior to their arrival I prepare the boxes and pots of mix and oversee the planting by allocating which bulbs go in the various boxes. Last June we planted out about 3,000 bulbs and a happy time was had by all.

The mix I use is rotted down straw with sheep manure added each time I fork the straw over. It takes about five months to compost this straw. At potting time

I add a bucketful each of coarse gravel, pine needles and ½" pine bark to each barrowload of straw. This helps to open up the mix for excellent drainage. The mix is then placed into polystyrene boxes 18" X 12" with the mix about 5" deep in each box. Any number from 40 to 60 bulbs are planted in each box depending on size.

After the boxes are filled and prior to planting I pour boiling water over them to kill any unwanted bugs, slugs or other nasties that have been living in the rotting straw. The bulbs are planted directly on to this and then partly covered with a finer mix of equal parts of cut up Bush moss, one eighth inch bark and fine mulched up pine needles. I do not use any bone meal in the mix as it is high in Phosphate, and I suspect that excess Phosphate may be a factor in leaf tip necrosis.

My orchid house is 26 feet long by 20 feet wide and is covered down one side by a clear plastic corrugated material, so one side is completely protected from natural rain, whilst the other side is always open to the elements. The side walls are just 70% shade cloth with the same material completely over the whole house. The cloth protects from sun, hail and keeps the birds out, but allows free air to flow right through the structure.

After planting, the boxes of bulbs are placed on 3' high benches, and given a watering to settle the top covering of mix around the bulbs. From then on the bulbs on the uncovered side receive all the natural rain right through their life. In the past year, June had 3½" of rain, July 2", August 2¾" and September 6¾" with rain occuring an average of 22 days in each month, so water was often running out of the boxes. The bulbs looked great, the flower spikes healthy, and in September they flowered beautifully, with no rot and no leaf tip necrosis. On the protected side the bulbs never looked so good, so I water them about

once a week, and even so they tend to shrivel quite a bit. I also had quite a bit of leaf tip necrosis on this protected side, so it may be, as some earlier contributors have suggested, that lack of water earlier in the season can cause leaf tip problems; or perhaps the continual rain on the open side has leached out all the phosphate salts.

Temperatures here at Frankston never get below freezing, the coldest days or nights are about 2°-5° Celcius, with the average minimum daily temperature for June, July, August and September being 7°, 7°, 9° and 8° Celcius respectively, whilst the average maximum daily temperature for those months was 19°, 17°, 23° and 21°C.

Because temperatures in England and on the Continent are very much colder with frosts and snow I would not recommend those people follow my procedure for watering through the dormant season, but where protection from sub-zero temperatures can be effected, my methods could be tried on a few bulbs.

In the warmer months of Dec., Jan., Feb. and March, average minimum daily temperatures are 13°, 16°, 17° and 14°C in that order whilst the average maximum daily temperatures are 26°, 29°, 29° and 27°C resectively.

Our summer days are hot and dry and quite a few days reach from 30°C to 35°C, so I put extra shading on during this period to raise the shading to about 82%, and much damping down of the floor to keep the humidity up. The extra shading is removed about the middle of March. This extra shading does not seem to depress flower production. The bulbs are watered heavily every 2nd. or 3rd. night depending on conditions.

I never water my pleiones during the daytime, only in the very late afternoon or evening, when the day is cooling down. Pleiones do not seem to like to be watered and then have the temperature rise before the leaves can dry off. This

especially applies to tiny seedlings from flask, because if any moisture gets down into the tiny leaves and then the temperature rises, the seedlings will quickly rot out. My motto is :- never water pleiones in the daytime.
Natural rain falling on them during the daytime does no harm, as when it rains a natural drop in temperature occurs, thus obviating the warming up problem.
I have in my collection many clones of **P.formosana** and the species of **speciosa, limprichtii** some few mature bulbs of **P.bulbocodioides** (6X) and two bulbs of **P.praecox.** I also have about six bulbs of **P x confusa** which I hope to flower next September.
Over the last ten years I have made hybrids **Versailles, Alishan,** and **Tongariro** and all of these have produced some very beautiful flowers. I also have a few bulbs of **Hekla, Eiger,** and two different forms of **Shantung.**
In conclusion I would like to thank Ian Butterfield, Sandra Bell of the Kew Gardens and Kath Fairhurst for some seed supplies they have sent me, and I report that the species of **P.yunnanensis, P.aurita, P.bulbocodioides** and **P.praecox** now in their second year are doing well.
Thanks also to you Peter for your efforts in collation and production of the N.P.R. a most interesting and instructive booklet.

MAX AKAM, 4 Koala Court, Frankston 3199, Melbourne, Australia.

****

DACTYLORHIZA RESCUE

This is my first contribution to the NPR. after having read the last four editions. When I first approached Peter about writing this I intended to write to relate my Pleione 'mishaps' of the last year. In the meantime, however, there have been other things happening and I'd like to tell the story of something that happened this summer (1993).

In December 1991 I was made redundant by the closure of a chemical plant. Shortly afterwards I was lucky enough to find a post with the Institute of Terrestrial Ecology and have been working with them since. By coincidence one of my former colleagues from the chemical plant also now works for I.T.E. We were talking in early August and he mentioned that the old factory was soon to be demolished and the site cleared for development. I recalled that there were large numbers of Dactylorhiza on the site which were likely to be destroyed. I telephoned David Wilkinson, the manager in charge of decommissioning the factory and obtained permission to remove plants from the site. He was very helpful and told me that there were also some Bee orchids on the site which were in the area which was to be ploughed up first!

The evening before the visit I had a telephone conversation with Norman Heywood. He reassured me that Bee orchids are not monocarpic (see also, WELLS & WILLEMS eds. POPULATION ECOLOGY OF TERRESTRIAL ORCHIDS, 1991) and also kindly agreed to distribute any rescued plants to selected parties and to Kew.

Upon arrival at the site I went first, at David's suggestion, to a small piece of ground next to the old works canteen. Although the grass had not been cut for two years and I wasn't very optomistic (it was Friday 13th!) there were literally hundreds of Dactylorhizas of at least two species. They were not, of

course flowering but some plants have heavily spotted leaves and seem likely to be fuchsii, whilst others were less than six inches high with plain leaves and are probably purpurella. One plant which stood out was a metre in height! It is possible that this is a particularly vigorous hybrid - more next year. After collecting a number of each Dactylorhiza, I asked David for directions to the Bee orchids. I found them, less than five metres from the wall of the old power-house, on a thirty year accumulation of builders sand and limestone chippings - this is where the concrete mixer used to stand! There were more than sixty plants which had set seed and gone dormant. At this stage I would like to point out that I abhor the removal of plants from the wild but A. They had no chance of survival in situ and, B. It is very unlikely that anyone else would have been allowed access to the site to remove them - a derelict chemical plant is an extremely dangerous place for an inexperienced person. I removed just over half of the plants, I would have liked to have removed some more Dactylorhiza but my hands were actually bleeding by this stage so I had to call it a day.

My wife Susan and myself spent the weekend preparing plants for dispatch to Norman, during this process we found five small Bee orchid tubers which had not flowered, these were the only ones which I had kept, along with five Dactylorhizas, including the large tentative hybrid. At the time of writing everything is busy producing leaves. I would like to thank Norman and David for their help.

I first heard of the genus Pleione in a book on orchids by Joyce Stewart which I bought purely out of curiosity whilst visiting Kew. The following spring I saw some formosana for sale in a garden centre and bought one, now four years later I am giving away its offspring! During the next year I read as much as I

could find on 'hardy' orchids and purchased two Calanthe and a Bletilla whilst at Southport flower show. These are now large plants with luxuriant foliage but no flowers as yet. I also obtained a **Dactylorhiza foliosa** which grows and flowers very reliably.
In the spring of 1992 I saw a photograph of Ian Butterfield's award winning pleione **Vesuvius 'Leopard'** in Garden News and rang Ian to ask for a list. I placed an order from this and also from Tony Smith whose advert I saw later in the year. In due course my pseudobulbs arrived and 1993 has been my first year of having a (albeit modest) Pleione collection. The pseudobulbs were potted up on arrival and placed in the greenhouse along with the other orchids already mentioned. I was probably a little too careful with the temperatures, using a heater when frost threatened outside, as severe frost is almost unknown on this island I should probably left well alone!
Most plants flowered without problems, however pleiones **Alishan, Versailles** and **Versailles 'Buckleberry'** and to a lesser extent **P.speciosa**, only extended part way out of their sheathing bract before trying to open, resulting in partly closed flowers on very short stems. I suspect that I kept the resting bulbs too dry for too long. Subsequent growth has been splendid however, so I hope things will be okay next spring. The main shoot on **P.Hekla** died after flowering without producing a leaf, but small leaves have developed from elsewhere and it looks like I should get at least two small new pseudobulbs from it.
Leaftip necrosis badly affected my plant of **P.Swaledale**, investigation turned up a large earthworm and its handiwork in destroying the compost structure, I took the risk and repotted the plant, the necrotic areas have not spread since and a decent root system has now developed, (autumn 1993)
My compost basically followed the Butterfield recipe with all organic constit-

uents gathered from the wooded grounds of the research station in which I work. I was most impressed with the relevant exhibits at the congress in Glasgow and bought some more pleiones from Ian Butterfield and an **Epipactis palustris** from Hardy Orchids Ltd. Lack of space will force me to be more selective in future, a yellow flowered pleione is probably top of the list but I would not turn down the chance to grow **P.aurita** or one of the autumn flowering species. Cypripediums! I would love to grow these but they are not exactly easy to get hold of!
I would be pleased to hear from any other pleione or hardy orchid growers as I'm a bit isolated here, best of luck with the new growing season.

Darren Sleep, 28 Foxfield Road, North scale, Walney Island, Barrow-in-Furness
Cumbria. LA14 3SJ

****

MICROPROPAGATING PLEIONES

There can be few pleione enthusiasts who have not wondered what might result from crossing their best plants and have also wished that those plants multiplied more quickly. It was just such thoughts of raising my own crosses which started me inquiring about the sterile conditions necessary to germinate orchid seed. That project has expanded and taken on a momentum of its own as I have explored some of the possibilities of rapid vegetative propagation under sterile conditions - micropropagation. This article describes some of my work, I don't claim it is original, the literature on micropropagating orchids is large and easily adapted, but my experiences as a novice in the field may be of use to

others who wish to try it for themselves.
About five years ago I was given the opportunity to use the sterile bench of a local firm to make an attempt to grow my own pleione seed using the methods described by Thompson (1). The procedures were not as difficult as I had assumed, and I began to read more about the subject. I found the review of orchid seed germination by Arditti (2), this drew my attention to another review by the same author on the propagation of orchids by tissue culture (another name for micropropagation). From these and other books it appeared that generally the mix of chemicals used to micropropagate orchids is more complex than those used to germinate their seeds, but the equipment and general methods appeared to be similar. The Arditti article contains only one reference to the micropropagation of pleiones, I have not seen the original paper which is in French, however Arditti states that details of the procedure are not given but that the methods for Cymbidium should be used. I was unable to find any other information on the micropropagation of pleiones, although later I learned from Ian Butterfield (3) that commercial laboratories have been successful. (Since writing the bulk of this article I have found a reference in Arditti's new publication Micropropagation of Orchids (7), to a paper on the micropropagation of pleiones published in 1980, brief details are given in the penultimate paragraph). In the meantime, the firm whos facilities I had used, had ceased trading and so I set about putting together the equipment to do the work at home. (In the interest of space I shall assume the reader has some knowledge of handling plants under sterile conditions. For those who wish to learn more of the techniques and equipment I recommend Kyte (4) and two articles which show what can be achieved with minimal apparatus, Thompson (1) and Barrow (5).)
The less said the better about my first attempt to micropropagate pleiones,

exept that the main buds of mature P.formosana pseudobulbs were used, and there was a massive problem with infection. After a year there were only a few growths surviving (on a medium for Cymbidium), but no propagation. Obviously the conditions were not right and I decided to try working with the small bulbils this would at least give me a larger source of material to experiment with.
In the autumn of 1990 I began my second attempt by dissecting a few bulbils. Beneath the brown papery coat/s which encloses the bulbil there are as many as three small buds. The size of the buds varies enourmously, and may be as small as half a millimetre cube to two mm. in diameter by four mm. high. Working with about thirty P.formosana bulbils and a few each of four hybrid pleiones, including one Shantung, the buds were removed with varying amounts of the bulbil still attached. The initial results were much improved in comparison with the previous effort, in that fewer were lost to infection. Within two months several were increasing in size and were transferred to an orchid multiplication medium, where they continued to grow. There were a few losses over the summer, but still no multiplication. In September 91 the single surviving Shantung bud produced a small new growth from the base. Within six weeks there were five new growths each about one mm. in diameter. These were carefully separated and transferred to new vessels. Two were put onto Thompson medium(1), of these, one began to grow without further division, while the other produced a single new growth as it also enlarged. The original pseudobulb and the three offsets placed onto fresh multiplication medium continued to increase in number. It had taken almost two years, but I now knew it was possible to micropropagate one particular pleione, as important, to be able to stop it multiplying by changing the medium.
It was now late 1991, and fired with the enthusiasm of the single succes I

began preparing the newly harvested bulbils. At about this time however one clump of the multiplying Shantung clone began to change its growth habit, instead of increasing by producing new shoots, it began to form an irregular, almost crystaline, clump of pale green cells. (This type of growth is called callus, the sort of growth that sometimes forms around a wound on a plant and may go on to produce roots and shoots to give a new plant.) After about eight weeks the callus had enlarged to seven mm. in diameter. It was divided into eight and placed on fresh multiplication media, where the pieces continued to grow as callus. After another division several small pieces were placed on the Thompson medium where the growth patern again changed. These continued to enlarge, but more slowly and the surface became dimpled (like orange peel). Small groups of cells on the surface became darker green and produced shoots, the bases of which became bulbous, such that the whole mass looked like a crowded group of orchid seedlings at the protocorm stage. Within ten weeks of being transferred to the Thompson medium the callus had converted to a mass of small pseudobulbs a millimetre or so in diameter which were easily divided into small clumps for growing on.

From almost forty different clones/varieties of bulbils from the '91 growing season, several represented by only a single bud, I was able to establish 26 in culture by January '92. By May of that year a dozen were multiplying, some as discrete shoots some as callus, others as a mix of the two.

The method I now use is basically as follows. The bud/s at the base of a bulbil are cut off with a thin slice of the bulbil attached and sterilised by soaking in water containing 5% Milton (bleach) and 0.1% Tween 20 (wetting agent) for 10 minutes. (All the subsequent stages must be carried out under sterile conditions). After washing in three changes of sterile water, the buds are trimmed

to leave as little as possible of the main bulbil,taking care not to cut into the bud itself. These are placed on Thompson's medium (1), each in a separate 30ml. screw cap jar (individual jars prevent the spread of infection. The jars are stored at 20 to 27 degrees centigrade with a 16 hour light period (two flourescent tubes 30cm. above a 60cm. wide shelf). After four to six weeks when the bud is showing a little enlargement it is transferred to Phytomax orchid multiplication medium (6). As multiplication occurs the growths are divided. Finally it is transferred in small pieces to Thompson medium to produce small pseudobulbs which are treated in the same manner as very small seedlings.

I have never had sufficient bud material of one type to experiment properly to optimise the conditions to induce multiplication, however there are a few observations which may be useful. i) A very small trial comparing P.formosana bulbils immediately after harvest with material stored at four degrees centigrade for six weeks showed no obvious differences in the growth on Thompson medium. ii) The timing of the transfer from Thompson medium to Phytomax medium is I believe important. Too early or too late and the developing bud only enlarges, or at least the onset of multiplication is delayed. iii) A high proportion of the buds on multiplication medium grow but do not propagate, some of these I have transferred to other media based on the published Phytomax formulae (6) but varying the concentration of the growth hormones a little. A few of these buds have subsequently begun dividing and have been returned to the unmodified Phytomax medium where they continued to divide. Care is needed when changing the hormones, several buds left on media with slightly raised levels (+25%) of the cytokinin 6-Benzylaminopurine developed misshapen gross roots. iv) The temperature at which the dividing plants are kept is important. At one

stage the temperature in the growth cabinet was dropping during the dark periods (the heater had failed, probably several days before it was noticed). The lowest temperature recorded on the max/min thermometer was ten centigrade. While all the plants on multiplication medium growing as discrete shoots survived, most of the callus growths became brown and died over the next few weeks.

I have attempted to find other sources of propagating material. A pleione pseudobulb has two areas for growth, the basal buds and microscopic axial buds close to the leaf scar from which the top bulbils are formed. Many times I have tried to obtain growths from portions cut from the top of both bulbils and mature pseudobulbs. Almost every attempt has ended with the material being destroyed by infection, although a few have grown and gone on to multiply. I assume that the exposed position of this material and the presence of scar tissue makes it difficult to sterilise. It is however a possible source of propagating material which is in short supply. Perhaps a medium containing anti bacterial/ fungal agents would be worth trying.

Ian Butterfield tells me that the micropropagated pleiones he has seen, showed a proportion which differed from the original plant, some of the flowers were improvements, others poorer. This is not uncommon with micropropagated plants of all types, and one of the reviews edited by Arditti (2) has a chapter on such variation in orchids. The general conclusion is that material should not be propagated over a large number of divisions, but should be constantly re-introduced from the original stock. As yet I have not seen any of my micropropagated plants flower, which I expect to take the same time as do seedlings - three to five years. I can say however that the first group to be transfered to compost appear to be growing normally, currently (2/94) the largest are about one centimeter in diameter. In view of the possible variation which may

occur I have kept separate material which has/has not involved callus growth. The first flowering promises to be an interesting time!
As an incentive to anyone considering starting work as described, they should also consider the possibility of micropropagating other plants.A number of my own interests, including bulbs and alpine plants are potentially good subjects. There is certainly a place for the amateur propagator to work with plants in which the commercial laboratories have no interest. A few words of caution however which apply to all plants not just pleiones. It is all too easy to produce large numbers of one type, although the growing on of orchids to flowering size will always be a limitation, I hope you will keep your propagating in reasonable bounds. Micropropagation does have one major advantage in that it can be used to help prevent the large scale collection of wild plants whether or not they are endangered, that can't be bad, so propagate the best of the species as well as the hybrids.
The paper dealing with the micropropagation of pleiones, by Weatherhead and Harberd (8), which I had missed in my literature search, confirms the difficulty I experienced with pleiones on media for Cymbidium, and describes a method with a high success rate. At present I have not been able to follow up any of their work, but basically the plant source is merristem isolated from shoots of mature pseudobulbs, and the Knudson based medium contains charcoal and lower levels of hormones than the Phytomax medium. They report only multiplication by formation of new protocorms, and not involving callus growth. It will be iteresting to compare the methods when material is available next Autumn, particularly with species which have so far failed to multiply on Phytomax multiplication medium. It is a concern to me that even knowing of the existance of the Weatherhead Harberd paper that on rechecking I have still not been able to find

a reference to it in Biological Abstracts under Pleione or Harberd, this makes me wonder what other references I have missed. If you know of any other relevant material please contact me.
Finally I would like to hear from anyone who has an interest in, or experience of micropropagating pleiones or similar plants.

A.F.Gosden, 12 Maes-y-felin, Penrhyncoch, Aberystwyth, Dyfed, SY23 3EN. U.K.

References

(1) Thompson, P.A., Orchids from Seed, Royal Botanic Gardens,Kew. 1977. The formula for Thompson medium - p22.
(2) Arditti, J. (Ed), Orchid Biology Reviews and Perspectives. Comstock Publishing Associates 1982. Seed Germination - Vol.ii P243-370. Tissue Culture -Vol.i p203-293. Variation in clonal Propagation by Vajrabhaya, T.Vol.i P177-201.
(3) Ian Butterfield of Butterfield's Pleiones, Bourne End, Bucks. U.K.
(4) Kyte,L. Plants from Test Tubes. Timber Press 1983
(5) Barrow. R. National Pleione Report 1990, P28.
(6) Phytomax media is supplied by Sigma Chemical Co. Ltd., Fancy Road, Poole, Dorset. The formulae for Sigma media are listed in their catalogue, and on the data sheets with the items.
(7) Arditti, J. and Ernst, R. Micropropagation of Orchids John Wiley & Sons 1993.
(8) Weatherhead, M.A. and Harberd, D.J. Hortic. Res. 20, 87-89 (1980)

****

LEARNING THE HARD WAY

Another growing year has passed and it's time to divide the crop. It looks pretty good this year, and I've learned a couple of things as well. Please excuse me if I cover old ground.

Being used to handling plants such as Rhododendrons, I was not aware that orchid roots require special treatment. I would, as a matter of course, break off roots growing out of pots or flats. My stock of flats are always rooted through into the soil of the beds and I would frequently tear them up and move them. I have discontinued this practice since I learned that orchid roots don't keep growing. As a result, I think I had better growth this year.

Every article I see on growing Pleione recommends them dry in the winter by protecting them with a bit of glass etc. I have never done this and have not been particularly worried about starting watering in the spring. My system is automatic and I start it fairly early in the year in the covered poly house. I start watering as growth starts, long before the roots are very big. I have never had a problem in the unheated poly house or in the garden. Last spring I wanted to experiment with forcing some bulbs for use in early shows. I planted them as usual and placed them in my heated greenhouse. I keep it at a minimum of 45 to 50 degrees F. I watered them when ever the soil looked dry. It was some time later that I noticed that about half of the bulbs were not growing. Inspection revealed that the growth buds were rotted off many of the bulbs. It is my feeling that the culprit is not water alone but water and high temperature combined. Cold and wet does not seem to bother, warm and wet does.

Along these lines, a friend lives on the Oregon coast. His garden seldom receives frost and when he does it is only two or three degrees. On rare occasions, such

as the winter of 1989-90, he gets into the low twenties or high teens. Daytime temperatures in the winter are generally in the high 40s or low 50s. His garden is very shaded and he grows his pleione in the moss on rotting Sitka Spruce stumps. They love it! This fall I saw bulbs in excess of three inches in diameter! Even **P.forrestii** seems happy. Jim takes no special pains to protect his bulbs from wet or cold. The coast can receive fifty inches of rain a year and there is no problem. The moss provides good drainage, as does the rotting wood. This is another case of cool and wet not being a problem.

Several years ago I imported pleione from a source in Hong Kong. The names on the packets bore absolutely no relation to their contents. The fifty **P.forestii** turned out to be **P.bulbocodioides.** I did get several **P.aurita,** quite a number of **P.yunnanense,** possibly a few **P.scopulorum** and maybe a few **P.kohlsii.** Not a bad assortment by any means. The large number of **P.bulbocodioides** turned out to be a blessing in disguise. I have sorted out 15 or 20 different clones and have observed several differences among them. Most lack the yellow on the lamellae seen in my original clone that I assume is **P.b. 'Yunnan'.** Without this they just don't seem as bright somehow. The lips exhibit less of a cleft as well. There is also considerable variation in their rate of reproduction and flower production! Several clones have barely replaced themselves over three years while others have increased four or five fold. My original clone has always been free flowering and very productive of large bulbs and bulbils. There is obvious variation within the species not only in flower color but reproductive habit.

There are a couple of practices I've noted of late that bother me. One is the selling of "names". A local grower continues to use obsolete names such as **P.pricei.** When I ask him about this practise he said that he could sell more

that way as people liked to collect names. I was fortunate to have The Genus Pleione in hand at an early stage. I didn't have to learn new names for old plants. I had just printed a thousand **P.yunnanense** tags when the name changed to **P.bulbocodioides** but I will use them up one of these days. Another seller (I can't call him a grower as he doesn't!) offers quite a variety of names in an advertisement in the American Orchid Soc. Journal. He was asking twice my price for several of the more common species. I called and talked to him and found that he buy's direct from a source in China. He never plants the bulbs, just repackages them. I have heard from several people that have ordered from him and they say that the bulbs are in poor condition and seldom survive. I deplore both of these practices as they tend to discourage people from growing these lovely plants.
Last but not least, The Genus Pleione is now out of print in this country. I do have a supply, however, at about 50% off the cover price of $32-95. I can offer the book at $15 U.S. or about £10 sterling, plus shipping, if anyone would like a copy. I would enjoy hearing from other growers at anytime.

Dick Cavender, Red's Rhodies, 15920 S.W. Oberst Lane, Sherwood, OR 97140. U.S.A.

****

THE HARDY ORCHID SOCIETY

The inaugural meeting of the society took place at the Newbury Horticultural Show on the 26th June 1993, an auspicious occasion, thirty-two people attended and apologies were received from another forty people.

A full committee was elected and the new society's rules and show rules were promulgated. One of the items raised at the meeting was this report (NPR). Since then your committee has agreed that the Report should be sent to each membership as part of their annual subscription.
We had a further one day meeting in conjunction with the British Orchid Congress, held in Lincoln in November 1993, (these events occur approximately every eighteen months, the next is in Brighton on the 22nd/23rd April 1995). The day was made up of a number of lectures and Forums and was enjoyed by all who attended.
Our next meeting was on the 9th March 1994, at the Royal Botanic Gardens, Kew. The day was entitled "The Royal Botanic Gardens, Kew and Hardy Orchid Society Joint Terrestrial Orchid Symposium". A very full day starting with Committee meetings, and followed by lectures from Derek Turner Ettlinger, Sandra Bell, Margaret Ramsay and during the afternoon guided tours of the mediterranean orchid house where most were in flower, whilst the tours were taking place, three forums also took place under the guiding hands of Kath Dryden, Barry Tattersall and Sandra Bell. From the reports coming back to me a good time was had by all and consequently it is proposed to hold a similar meeting at about the same time and venue next year.
Our Annual General Meeting takes place in conjunction with our Annual Show at Pershore on the 14th May 1994, with a talk on Pleiones by Ian Butterfield and we hope lots of plants on sale and display. I shall report on this in the next issue of the NPR.

Norman Heywood, Hon. Sec. The Hardy Orchid Society.

ORCHID ICE CREAM ANYONE ?

Everyone, I'm sure, is familiar with the commonest ice-cream flavouring, vanilla, and knows that it is extracted from the seed capsule of a genus of vine-like, climbing orchids, Vanilla. Hundreds of millions of gallons of vanilla ice-cream are enjoyed annually. However, such consumption poses little threat to wild Vanilla species. High-yielding strains are grown as a crop in Madagascar and India while in Mexico sustainable harvesting of vanilla planted in open forest is providing a spur to forest conservation. Compared with vanilla, world consumption of the other ice-cream flavouring derived from an orchid, salep, is miniscule and yet it poses a very real threat to the survival of some orchid species in Turkey.

Salep is a powder made by grinding-up dried dormant tubers of a number of European orchid species. The raw powder, used as a flovouring in milky drinks and, most significantly, for ice-cream called marash dondurma which is very popular amongst Turkish people of all ages living both in Turkey and in ex-patriot communities elsewhere. Both powder and ice-cream can be bought in Turkish shops in Stoke Newington in London. Whilst aphrodisiac powers are claimed by some the main attraction of salep seems to be it's unique taste and the texture which it gives to ice-cream.

Orchids forming the largest tubers are those most threatened by harvesting for salep and species such as **Barlia robertiana** which have relatively large tubers occur in much smaller numbers than would be expected in Turkey as a result of years of exploitation. Over thirty other species are also harvested intensively. Tubers are collected by women and children living in nearby villages and as only one new tuber is produced by each flowering plant, collection results in

the death of the plant. Turkey's geographical position, climate, land-form and history combine to give one of the richest orchid floras in Europe, a richness which grows more and more threatened annually by tourism, urbanisation, over-growing and road building, in addition to the collection of tubers for salep. Concern has been mounting over the fate of Turkey's orchids for some years and steps are being taken to remedy the situation. Researchers at Ankara University have identified a number of objectives intended to conserve Turkish orchids. The first is to establish a collection of native orchids in cultivation to serve as a gene pool for reintroduction and prevent species from being lost completely. The second is to promote methods of cultivating and propagating tuberous orchids as a crop plant so that any need to collect from wild stocks is reduced. A similar approach is proving successful in propagating many species of Turkish bulbs which are also threatened by over-collection. The third measure is to find a chemical substitute for salep. Analysis has been carried out and substitutes synthesised but refinement is required before the palates of salep lovers will be satisfied. A substitute would also mean that harvesters, who are often the poorer members of the community, would lose income which they can ill-afford. An advantage of the propagation scheme is that it could potentially be based-in and run by village communities providing a larger and more stable income.

Legislative measures may also be used, however, these may have the disadvantages of being very difficult to enforce in rural areas and perhaps forcing trade in salep underground making it more difficult to monitor.

Work is beginning on the first three measures proposed and it is to be hoped that they will develop into a comprehensive package to protect Turkey's rich orchid flora.

Further information about salep can be obtained from:-

Flora and Fauna Preservation Society
1 Kensington Gore
London
SW7 2AR

Society for the Protection of Nature
A P K 18
N Bebek 80810
D Istanbul
Turkey

Sandra Bell, Royal Botanic Gardens, Kew.

****

It pleases me no end and I hope it pleases you as well that another report has been produced. It is good news that eight of the ten articles in this years report are by new contributors. I interpret this as a sign that readers old and new are becoming less inhibited about writing something of their experiences. We all have something of interest to say. So with one voice let's all say a big **THANKYOU** to all persons who have contributed to our report.
Further to K.Ds. article on the 'Black Death' - Kath hopes to report on a new angle concerning this disease or whatever it is next year as news of a possible cause may have been found.
It is nice to receive a short article from the Hardy Orchid Society. As each of their members are to receive a copy of the NPR as part of their membership it is hoped this will result in contribution coming in from them to enlarge our shared knowlege.

Peter Bradbury.